

Smoking, Air Pollution, and the High Rates of Lung Cancer in Shenyang, China

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A case-control study involving interviews with 1,249 patients with lung cancer and 1,345 population-based controls was conducted in Shenyang, an industrial city in northeastern China, where mortality rates are high among men and women. Cigarette smoking was found to be the principal cause of lung cancer in this population, accounting for 55% of the lung cancers in males and 37% in females. The attributable risk percentage among females is high compared to elsewhere in China, largely because of a higher prevalence of smoking among women. After adjustment for smoking, there were also significant increases in lung cancer risk associated with several measures of exposure to air pollutants. Risks were twice as high among those who reported smoky outdoor environments, and increased in proportion to years of sleeping on beds heated by coal-burning stoves (kang), and to an overall index of indoor air pollution. Threefold increases in lung cancer risk were found among men who worked in the nonferrous smelting industry, where heavy exposures to inorganic arsenic have been reported. The associations with both smoking and indoor air pollution were stronger for squamous cell and small cell carcinomas than for adenocarcinoma of the lung. Risks due to smoking or air pollution were not greatly altered by adjustment for consumption of fresh vegetables or sources of beta carotene or retinol, prior chronic lung diseases, or education level. The findings suggest that smoking and environmental pollution combine to account for the elevated rates of lung cancer

cer mortality in Shenyang. [J Natl Cancer Inst 81:1800-1806, 1989]

Differences in Incidence Rates of Cancers of the Respiratory Tract by Anatomic Subsite and Histologic Type: An Etiologic Implication

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Data from nine population-based cancer registries participating in the Surveillance, Epidemiology, and End Results Program (1973-1982) were analyzed to determine whether the incidence of different histologic types of respiratory tract cancers varies by anatomic location. The variation in cancer incidence among respiratory tract subsites was remarkable for squamous cell carcinoma, but the variation was less prominent for adenocarcinoma. The rates of squamous cell carcinoma and adenocarcinoma along the airways correspond closely with the deposition pattern of large and small smoke particles, respectively. Also, the rates of adenocarcinoma parallel the distribution of surface glandular cells of the respiratory tract. Our results support the hypothesis that anatomy and physiology, in conjunction with size of particles in inhaled cigarette smoke, play an important role in the genesis of specific histologic types of respiratory tract cancers. [J Natl Cancer Inst 81:1828-1831, 1989]

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